UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
8/30/2004

Mr. Alan Pollock, Acting Director
Division of Water Quality Programs
Virginia Department of Environmental Quality
629 Main Street
Richmond, VA 23219

Dear Mr. Pollock:

The United States Environmental Protection Agency (EPA) Region III is pleased to approve the Total Maximum Daily Loads (TMDLs) for the primary contact and aquatic life (benthic) use impairments on Peak Creek. The TMDLs were submitted to EPA for review in April 2004. The TMDLs were established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address an impairment of water quality as identified in Virginia's 1996 Section 303(d) list.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) designed to attain and maintain the applicable water quality standards, (2) include a total allowable loading and as appropriate, wasteload allocations (WLAs) for point sources and load allocations for nonpoint sources, (3) consider the impacts of background pollutant contributions, (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated), (5) consider seasonal variations, (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality), (7) consider reasonable assurance that the TMDL can be met, and (8) be subject to public participation. The enclosure to this letter describes how the TMDLs for the aquatic life and primary contact use impairments satisfy each of these requirements.

Following the approval of these TMDLs, Virginia shall incorporate the TMDLs into an appropriate Water Quality Management Plan pursuant to 40 CFR § 130.7(d)(2). As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL WLA pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.

If you have any questions or comments concerning this letter, please don't hesitate to contact Mr. Peter Gold at (215) 814-5236.

Sincerely,

/S/

Jon M. Capacasa, Director
Water Protection Division

Enclosure

Decision Rationale

Total Maximum Daily Loads for
the Primary Contact (Bacteriological) and Aquatic Life Use Impairments on Peak Creek

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) be developed for those water bodies identified as impaired by a state where technology-based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a margin of safety (MOS), that may be discharged to a water quality-limited water body.

This document will set forth the Environmental Protection Agency's (EPA's) rationale for approving the TMDLs for the primary contact (bacteriological) and aquatic life use impairments on Peak Creek. EPA's rationale is based on the determination that the TMDLs meet the following eight regulatory conditions pursuant to 40 CFR §130.

1) The TMDLs are designed to implement applicable water quality standards.
2) The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.
3) The TMDLs consider the impacts of background pollutant contributions.
4) The TMDLs consider critical environmental conditions.
5) The TMDLs consider seasonal environmental variations.
6) The TMDLs include a margin of safety.
7) There is reasonable assurance that the TMDLs can be met.
8) The TMDLs have been subject to public participation.

II. Background

The Peak Creek Watershed is located in Pulaski County, Virginia. Peak Creek is a tributary to Claytor Lake in the New River Basin. The bacteriological and benthic impairments on Peak Creek extend from 0.2 miles downstream of the Washington Street Bridge to the backwaters of Claytor Lake (4.46 miles). The 53,976-acre watershed is rural with forested and agricultural lands making up 65 and 25 percent of the watershed respectively. Residential and commercial lands make-up the remainder of the watershed.

In response to Section 303(d) of the CWA, the Virginia Department of Environmental Quality (VADEQ) listed Peak Creek (VAW-N17R) on Virginia's 1996 Section 303(d) list as being unable to attain the primary contact use, the aquatic life use impairment was added to the 1998 Section 303(d) List. The decision to list Peak Creek for these impairments was based on observed violations of the Commonwealth's bacteriological criteria and assessments of the biological assemblage. At the time of its listing, the bacteria criteria used fecal coliform as an indicator species and had an instantaneous standard 1,000 colony forming units (cfu) per 100 milliliters (ml) and geometric mean standard of 200 cfu/100ml. This decision rationale will address the TMDLs for both impairments.

Fecal coliform is a bacterium which can be found within the intestinal tract of all warm blooded animals. Fecal coliform indicates the presence of fecal wastes and the potential for the existence of other pathogenic bacteria. The higher concentrations of fecal coliform indicate the elevated likelihood of increased pathogenic organisms.

EPA encouraged the states to use e-coli and enterococci as the indicator species instead of fecal coliform. A better correlation was drawn between the concentrations of e-coli and enterococci, and the incidence of gastrointestinal illness. The Commonwealth adopted e-coli and enterococci criteria in January 2003. According to the new criteria, streams are evaluated via the e-coli and enterococci criteria after 12 samples have been collected using these indicator species. Twelve e-coli samples were collected from Peak Creek and it is therefore assessed according to the new criteria.

As Virginia designates all of its waters for primary contact, all waters are required to meet the bacteriological standard for primary contact. Virginia's standard applies to all streams designated as primary contact for all flows. The e-coli criteria requires a geometric mean concentration of 126 cfu/100ml of water with no sample exceeding 235 cfu/100 ml of water. The new e-coli criteria requires the concentration of e-coli not exceed 235 cfu/100ml of water.

Although the TMDL and criteria require the 235 cfu/100 ml of water concentration limit not be exceeded, waters are not placed on the Section 303(d) list if their violation rate does not exceed 10 percent. Therefore, Peak Creek may be deemed as attaining its primary contact use prior to the implementation of all of the TMDL reductions. It is necessary to keep this in mind because the reductions required to attain the instantaneous criteria for e-coli in the model are extremely stringent.

To assess the biological integrity of a stream, Virginia uses EPA's Rapid Bioassessment Protocol II (RBPII) to determine status of a stream's benthic macroinvertebrate community.[1] This approach evaluates the benthic macroinvertebrate community between a monitoring site and its reference station. Measurements of the benthic community, called metrics, are used to identify differences between monitored and reference stations.[2] The state is currently in the process of changing this methodology to a stream condition index (SCI) approach.

[1]Tetra Tech 2002. Total Maximum Daily Load (TMDL) Development for Blacks Run and Cooks Creek. Fairfax, Virginia.

[2]Ibid 1

As part of the RBPII approach, reference stations are established on streams which are minimally impacted by humans and have a healthy benthic community. These reference stations represent the desired community for the monitored sites. Monitored sites are evaluated as non-impaired, slightly impaired, moderately impaired, or severely impaired based on a comparison of the biological community of the reference and monitored sites. Streams that are classified as moderately (after a confirmatory assessment) or severely impaired after an RBPII evaluation are classified as impaired and are placed on the Section 303(d) list of impaired waters. Peak Creek was assessed as moderately impaired.

The RBPII analysis assesses the health of the macroinvertebrate community of a stream. The analysis will inform the biologist if the stream's benthic community is impaired. However, it will not inform the biologist as to what is necessarily causing the degradation of the benthic community. Additional analysis may be required to determine the pollutants which are causing the impairment as some information can be gleaned based on based on the composition of the community. TMDL development requires the identification of impairment causes and the establishment of numeric endpoints that will allow for the attainment of designated uses and water quality criteria.[3]

A reference watershed approach was used to determine the numeric endpoints for the pollutants impacting Peak Creek. Numeric endpoints represent the water quality goals that are to be achieved through the implementation of the aquatic life use TMDL which will allow the impaired water to attain its designated use. A reference watershed approach is based on selecting a non-impaired watershed that shares similar landuse, ecoregion, and geomorphological characteristics with the impaired watershed. The stream conditions and loadings in the reference stream are assumed to be the conditions needed for the impaired stream to attain standards.

The bacteriological TMDL submitted by Virginia is designed to determine the acceptable load of e-coli which can be delivered to the impaired segment, as demonstrated by the Hydrologic Simulation Program Fortran (HSPF), in order to ensure that the water quality standard is attained and maintained. HSPF is considered an appropriate model to analyze the impaired water because of its dynamic ability to simulate both watershed loading and receiving water quality over a wide range of conditions. The model was run to determine the fecal coliform loading to Peak Creek. A translator equation was used to convert fecal coliform results to E-coli.

The bacteriological TMDL analysis allocates the application/deposition of fecal coliform to land based and instream sources. For land based sources, the HSPF model accounts for the buildup and washoff of pollutants from these areas. Buildup (accumulation) refers to all of the complex spectrum of dry-weather processes that deposit or remove (die-off) pollutants between

[3] Ibid 1

storms.[4] Washoff is the removal of fecal coliform which occurs as a result of runoff associated with storm events. These two processes allow the model to determine the amount of fecal coliform from land based sources which is reaching the stream. Point sources and wastes deposited directly to the stream were treated as direct deposits. Wastes which are deposited directly to the stream do not need a transport mechanism.

Local rainfall and temperature data were needed to develop the model. Weather data provides the rainfall data which drives the TMDL model. Weather data was obtained from the NWS Station #446955 in Pulaski County for the bacteria and benthic TMDLs.

Continuous stream flow data was not available for Peak Creek. Therefore, a paired watershed approach was used to develop the hydrology model for the bacteria TMDL. The model was developed to a United States Geological Survey (USGS) gage on Upper Tinker Creek. The input parameters used for this model were then used as the basis for the Peak Creek hydrology model. The results of the Peak Creek hydrology model were compared to limited USGS data collected from station 03168450 (Peak Creek at Magnox-Pulaski). The watershed was divided into nine segments for the model. The bacteria loading model was calibrated and validated against observed data from the VADEQ monitoring stations within the Peak Creek Watershed.

The benthic TMDL was developed using the Generalized Watershed Loading Function model (GWLF). The GWLF model provides the ability to simulate runoff, sediment, and nutrient loadings from watersheds given variable source areas (e.g., agricultural, forested, and developed land).[5] GWLF is a continuous simulation model that uses daily time steps for weather data and water balance calculations.[6] Calculations are made for sediment based on daily water balance totals that are summed to give monthly values. A mass balance model to predict the concentrations of metals in stream sediments was used in combination with the GWLF to determine the loading of metals to the stream. The concentrations of copper and zinc in the sediments were modeled and calibrated to the median concentrations observed at ambient monitoring stations.

A reference watershed approach was used to estimate the necessary load reduction needed to restore a healthy aquatic community and allow the Peak Creek to achieve its designated uses. The Upper Peak Creek Watershed was selected as the reference watershed for Peak Creek.The target copper and zinc loads for the impaired segment was the median monitored sediment concentrations of copper and zinc in Upper Peak Creek.

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[4]CH2MHILL, 2000. Fecal Coliform TMDL Development for Cedar, Hall, Byers, and Hutton Creeks Virginia,

[5]Ibid 1

[6]Ibid 1

Table 1 - Summarizes the Specific Elements of the TMDLs.

Segment	Parameter	TMDL	WLA	LA	MOS
Peak Creek	E-coli (cfu/yr)	4.26E+12	8.70E+08	4.26E+12	Implicit
Peak Creek	Copper (kg/yr)	218	12	206	Implicit
Peak Creek	Zinc (kg/yr)	1,833	57	1,776	Implicit

The United States Fish and Wildlife Service has been provided with copy of these TMDLs.

III. Discussion of Regulatory Conditions

EPA finds that Virginia has provided sufficient information to meet all of the eight basic requirements for establishing a primary contact (bacteriological) and aquatic life (benthic) use impairment TMDLs for Peak Creek. EPA is therefore approving these TMDLs. EPA's approval is outlined according to the regulatory requirements listed below.

1) The TMDLs are designed to meet the applicable water quality standards.

<u>Bacteria</u>

Virginia has indicated that excessive levels of fecal coliform due to nonpoint sources (both wet weather and directly deposited nonpoint sources) have caused violations of the water quality criteria and designated uses on Crab Creek. The water quality criterion for fecal coliform was a geometric mean 200 cfu/100ml or an instantaneous standard of no more than 1,000 cfu/100ml. Two or more samples over a thirty-day period are required for the geometric mean standard. Since the state rarely collects more than one sample over a thirty-day period, most of the samples were measured against the instantaneous standard.

The Commonwealth has changed its bacteriological criteria as indicated above. The new e-coli criteria requires a geometric mean of 126 cfu/100ml of water with no sample exceeding 235 cfu/100 ml. The new criteria is more stringent and if the loading remains constant the violation rate should increase.

The HSPF model was used to determine the fecal coliform deposition rates to the land as well as loadings to the stream from direct deposit sources. Once the existing load was determined, allocations were assigned to each source category to develop a loading pattern that would allow Peak Creek to support the e-coli water quality criterion and primary contact use. The following discussion is intended to describe how controls on the loading of e-coli to Peak Creek will ensure that the criterion is attained.

The TMDL modelers determined the fecal coliform production rates within the watershed. Data used in the model was obtained from a wide array of sources, including farm practices in the area, the amount and concentration of farm animals, animal access to the stream, wildlife in the watershed, wildlife fecal production rates, landuses, weather, stream geometry, etc.. The model combined all of the data to determine the hydrology and water quality of the stream. The lands within the watersheds were categorized into specific landuses. The landuses had specific loading rates and characteristics that were defined by the modelers. Therefore, the loading rates are different in lands defined as forested versus pasture. Pasture lands support cattle and are influenced differently by stormwater runoff.

The Peak Creek bacteria TMDL model was run using weather data collected from the NWS Station #446955 weather station in Pulaski County. This data was used to determine the precipitation rates in the watershed which transport land deposited pollutants to the stream through overland and groundwater flow. Waste that was deposited to the land or stored was subjected to a die-off rate. The longer fecal coliform stayed on the ground the greater the die-off. Materials that were washed off the surface shortly after deposition were subjected to less die-off. The hydrology model of the TMDL was calibrated to a paired watershed (Upper Tinker Creek) that was determined to have similar hydrology to Peak Creek. This model was transferred to Peak Creek and then calibrated for hydrologic accuracy using instantaneous flow data collected on Peak Creek at a USGS monitoring station. The water quality model for bacteria was calibrated to observed data collected from Peak Creek.

Through the development of this and other similar TMDLs, it was discovered that natural conditions (wildlife contributions to the streams) could cause or contribute to violations of the bacteria criteria. BST sampling data collected on Peak Creek indicated that bacteria from wildlife represents a significant portion of the instream load. Many of Virginia's TMDLs, including the TMDL for Peak Creek, have called for some reduction in the amount of wildlife contributions. EPA believes that a significant reduction in wildlife is not practical and will not be necessary due to the implementation plan discussed below.

A phased implementation plan will be developed for all streams in which the TMDL calls for reductions in wildlife. In Phase 1 of the implementation, the Commonwealth will begin implementing the reductions (other than wildlife) called for in the TMDL. In Phase 2, which can occur concurrently to Phase 1, the Commonwealth will consider addressing its standards to accommodate this natural loading condition. The Commonwealth has indicated that during Phase 2, it may develop a Use Attainability Analysis (UAA) for streams with wildlife reductions which are not used for frequent bathing. Depending upon the result of the UAA, it is possible that these streams could be designated for secondary contact.

After the completion of Phase 1 of the implementation plan, the Commonwealth will monitor the stream to determine if the wildlife reductions are actually necessary, as the violation level associated with the wildlife loading may be smaller than the percent error of the model. In Phase 3, the Commonwealth will investigate the sampling data to determine if further load reductions are needed in order for these waters to attain standards. If the load reductions and/or the new application of standards allow the stream to attain standards, then no additional work is warranted. However, if standards are still not being attained after the implementation of Phases

1 and 2, further work and reductions will be warranted.

Benthic

As stated above, the biological assessments on Peak Creek were not able to discern a clear stressor to the Creek. The TMDL modelers therefore conducted a stressor identification analysis to determine what was impacting the benthic community. Ambient water quality data was able to rule out dissolved oxygen (DO), temperature or sediment as the stressors to Peak Creek. An excessive loading of copper and zinc were seen as the cause of the benthic impairment on Peak Creek. In high enough concentrations, both Copper and zinc can be toxic to aquatic organisms having detrimental impacts on the benthic community. Sporadic violations of the probable effects concentration (PEC) were observed for both copper and zinc. Also the biological community was composed of metals tolerant species in the impacted areas. These same organisms made up a smaller portion of the benthic community in non-impacted areas.

The GWLF model was used to determine the loading rates of sediment to the impaired and reference stream from all point and nonpoint sources. The TMDL modelers determined the sediment loading rates within each watershed. Data used in the model was obtained on a wide array of items, including land uses in the area, point sources in the watershed, weather, stream geometry, etc.. A mass balance equation was used to determine the concentrations of copper and zinc in the sediment.

The GWLF model provides the ability to simulate runoff and sediment loadings from watersheds given variable source areas (e.g., agricultural, forested, and developed land). GWLF is a continuous simulation model that uses daily time steps for weather data and water balance calculations.[7] Local rainfall and temperature data were needed to simulate the hydrology, this data was obtained from NWS station #446955. In the GWLF model, the nonpoint source load calculation is affected by terrain conditions, such as the amount of vegetative, land slope, soil erodibility, and land practices used in the area.[8] Parameters within the model account for these conditions and practices. Since there were no flow gages with appropriate data for calibrating the GWLF model within the impaired and reference watersheds, the hydrology component of the model was not calibrated to observed flow data. The GWLF was developed to be used on watersheds without gage data.

2) The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.

Total Allowable Loads

Virginia indicates that the total allowable loading is the sum of the loads allocated to land

[7]Ibid 1

[8]Ibid 1

based precipitation driven nonpoint source areas (forest and agricultural land segments) and point sources. Activities that increase the levels of bacteria, copper and zinc to the land surface or their availability to runoff are considered flux sources. The actual value for total loading can be found in Table 1 of this document. The total allowable load is calculated on an annual basis.

Waste Load Allocations

Thirteen regulated facilities were identified as discharging to the Peak Creek Watershed. Of these thirteen facilities, one is permitted to discharge bacteria to Peak Creek, two are permitted to discharge copper and zinc and one is permitted to discharge zinc. Only one of the three facilities which are allowed to discharge metals is a non-stormwater facility. That facility is the Magnox Pulaski Corporation and its waste load allocation can be determined by multiplying its permitted flow by its allowable concentration of copper and zinc by 365 days after the appropriate unit conversions. The other two facilities which are allowed to discharge metals are stormwater facilities and their WLA is based on the average stormwater flow. The permitted discharger of bacteria is a private residence and is allowed to discharge 500 gallons of effluent per day with a bacteria concentration of 126 cfu/100ml. Its WLA can be determined by multiplying the flow by the concentration by 365 days after the appropriate unit conversions.

EPA regulations require that an approvable TMDL include individual waste load allocations (WLAs) for each point source. According to 40 CFR 122.44(d)(1)(vii)(B), "Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with assumptions and requirements of any available WLA for the discharge prepared by the state and approved by EPA pursuant to 40 CFR 130.7." Furthermore, EPA has authority to object to the issuance of any National Pollutant Discharge Elimination System (NPDES) permit that is inconsistent with the WLAs established for that point source.

Table 2 - WLAs for Peak Creek

Facility	Permit Number	E-Coli (cfu/yr)	Copper (kg/yr)	Zinc (kg/yr)
Private Residence	VAG402040	8.70E+08	0.0	0.0
Magnox Pulaski Inc	VA0000281	0.0	12	57
McCready Lumber Company	VAR050772	0.0	0.6	0.6
Gem City Iron and Metal	VAR520118	0.0	0.1	0.0

Load Allocations

According to Federal regulations at 40 CFR 130.2(g), load allocations (LAs) are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting loading. Wherever possible, natural and nonpoint source loads should be distinguished.

In order to accurately simulate landscape processes and nonpoint source loadings of bacteria, VADEQ used the HSPF model to represent the impaired watersheds. The HSPF model is a comprehensive modeling system for the simulation of watershed hydrology, point and nonpoint source loadings, and receiving water quality. HSPF uses precipitation data for continuous and storm event simulation to determine total loading to the impaired segments from the various land uses within the watershed.

For the metals TMDL the GWLF model was used to ascertain the sediment loading to Peak Creek. This model provides the monthly sediment load to the stream through the use of the universal soil loss equation (USLE). The USLE derives the sediment loading by using information on precipitation rates, best management practices, land slope, and vegetative cover. The current property owners of the Allied Signal Site are working with EPA Removal section to remove historic metals contamination from the site. Table 3a, 3b and 3c list the LAs for Peak Creek.

Table 3a - LA for Bacteria (E-coli) for Peak Creek

Source Category	Existing Load (cfu/yr)	Allocated Load (cfu/yr)	Percent Reduction
Residential	4.64E+14	2.32E+12	99.5
Commercial	7.43E+12	3.72E+10	99.5
Barren	6.93E+12	3.47E+10	99.5
Cropland	5.02E+15	2.51E+13	99.5
Livestock Access	2.36E+14	1.18E+12	99.5
Pasture	3.20E+15	1.60E+13	9995
Forest	5.70E+13	1.71E+13	68
Livestock - Direct	3.36E+15	0.00E+00	100
Wildlife - Direct	1.46E+13	1.46E+13	0
Straight Pipes and Sewer Overflows	2.99E+13	0.00E+00	100

Table 3b - LA for Copper for Peak Creek

Source Category	Existing Load (g/yr)	Proposed Load (T/yr)	Percent Reduction
Background	1.45E+05	1.20E+05	17
Urban Stormwater	8.27E+04	5.99E+04	28
Allied Signal Stormwater	2.51E+06	2.51E+04	99
Magnox Process Water	1.23E+04	1.23E+04	0

Magnox Stormwater	1.41E+02	1.41E+02	0

Table 3b - LA for Zinc for Peak Creek

Source Category	Existing Load (g/yr)	Proposed Load (T/yr)	Percent Reduction
Background	7.52E+05	7.52E+05	0
Urban Stormwater	4.39E+05	4.39E+05	0
Allied Signal Stormwater	3.44E+06	5.85E+05	83
Magnox Process Water	5.60E+04	5.60E+04	0
Magnox Stormwater	9.57E+02	9.57E+02	0

3) The TMDLs consider the impacts of background pollution.

The TMDL considers the impact of background pollutants by considering the bacteria and metals loadings from background sources like wildlife and upland segments.

4) The TMDLs consider critical environmental conditions.

According to EPA's regulation 40 CFR 130.7 (c)(1), TMDLs are required to take into account critical conditions for stream flow, loading, and water quality parameters. The intent of this requirement is to ensure that the water quality of Peak Creek is protected during times when it is most vulnerable.

Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards[9]. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable "worst-case" scenario condition. For example, stream analysis often uses a low-flow (7Q10) design condition because the ability of the waterbody to assimilate pollutants without exhibiting adverse impacts is at a minimum.

The HSPF and GWLF models were run over a multi-year period to insure that they accounted for a wide range of climatic conditions. The allocations developed in these TMDLs will therefore insure that the criteria are attained over a wide range of environmental conditions including wet and dry weather conditions.

[9]EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

5) The TMDLs consider seasonal environmental variations.

Seasonal variations involve changes in stream flow and loadings as a result of hydrologic and climatological patterns. In the continental United States, seasonally high flows normally occur in early spring from snow melt and spring rain, while seasonally low flows typically occur during the warmer summer and early fall drought periods.

Bacteria loadings also change during the year based on crop cycles, waste application rates, vegetative cover and cattle access patterns. Consistent with the discussion regarding critical conditions, the HSPF and GWLF models and TMDL analysis effectively considered seasonal environmental variations through the use of observed weather data over an extended period of time and by modifying waste application rates, crop cycles, and livestock practices.

6) The TMDLs include a margin of safety.

This requirement is intended to add a level of safety to the modeling process to account for any uncertainty. The MOS may be implicit, built into the modeling process by using conservative modeling assumptions, or explicit, taken as a percentage of the WLA, LA, or TMDL. Virginia included an implicit MOS in the bacteria TMDL through the use of conservative modeling assumptions in the determination of bacteria loadings from point sources and the land application of biosolids.

7) There is a reasonable assurance that the TMDLs can be met.

EPA requires that there be a reasonable assurance that the TMDLs can be implemented. WLAs will be implemented through the NPDES permit process. According to 40 CFR 122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the state and approved by EPA. Furthermore, EPA has authority to object to issuance of an NPDES permit that is inconsistent with WLAs established for that point source.

Nonpoint source controls to achieve LAs can be implemented through a number of existing programs such as Section 319 of the CWA, commonly referred to as the Nonpoint Source Program. The current property owners of the Allied Signal Site are working with EPA Removal section to remove historic metals contamination from the site. It is believed that this work will help alleviate the benthic impairment on Peak Creek.

8) The TMDLs have been subject to public participation.

During the development of the TMDLs for the Peak Creek watershed, public involvement was encouraged through several meetings to discuss and disseminate the Peak Creek TMDLs. A basic description of the TMDLs process and the agencies involved was presented at a kickoff meeting on May 29, 2003 at the Dublin Library in Dublin, Virginia with 24 people in attendance. The first public meeting was held on September 30, 2003 at the Pulaski

Town Hall in Pulaski, Virginia with thirteen people in attendance. A “Field Day” was offered on November 18, 2003 to all stakeholders in the Back Creek, Crab Creek, and Peak Creek watershed areas. Nine people attended the “Field Day.” The final model simulations and the TMDL load allocations were presented during the final public meeting on March 17, 2004 at the New River Valley Competitiveness Center in Radford, Virginia. Twenty-five people attended the final public meeting. The first and final public meetings were both noticed in the Virginia Register and open to a thirty-day public comment period. Written comments were received and responded to by VADEQ.